

=> e Ca0.2Fe0.8Li04P/mf

E1	1	CA0.2FE0.8LA0.803TI0.2/MF
E2	1	CA0.2FE0.8LA03/MF
E3	0 -->	CA0.2FE0.8LI04P/MF
E4	1	CA0.2FE1.1202.12ZN0.24/MF
E5	1	CA0.2FE1.2MG0.202.2/MF
E6	1	CA0.2FE12019PB0.8/MF
E7	1	CA0.2FE2.804/MF
E8	1	CA0.2FE2.9NA0.905/MF
E9	1	CA0.2FE2MG0.804/MF
E10	1	CA0.2FE204ZN0.8/MF
E11	1	CA0.2FE4.31LU0.17012SC0.69Y2.63/MF
E12	1	CA0.2FE4.3IN0.6012V0.1Y2.8/MF

=> e iron magnesium lithium phosphate/cn

E1	1	IRON MAGNESIUM HYDROXIDE THIOSULFATE (FE2MG6(OH)16(S2O3))/CN
E2	1	IRON MAGNESIUM HYDROXIDE THIOSULFATE (FE2MG6(OH)16(S2O3)), TETRAHYDRATE/CN
E3	0 -->	IRON MAGNESIUM LITHIUM PHOSPHATE/CN
E4	1	IRON MAGNESIUM MANGANESE ARSENATE HYDROXIDE (FEMG4MN5(ASO4)2(OH)15)/CN
E5	1	IRON MAGNESIUM MANGANESE CARBONATE HYDROXIDE (FE0.2-1MG6MN1-1.8(CO3)(OH)16)/CN
E6	1	IRON MAGNESIUM MANGANESE CARBONATE HYDROXIDE (FE1-1.8MG6MN0.2-1(CO3)(OH)16)/CN
E7	1	IRON MAGNESIUM MANGANESE CHLORIDE ((FE,MG,MN)CL2)/CN
E8	1	IRON MAGNESIUM MANGANESE HYDROXIDE PHOSPHATE (FE2MG0.1-0.5MN0.5-0.9(OH)2(PO4)2)/CN
E9	1	IRON MAGNESIUM MANGANESE HYDROXIDE SILICATE/CN
E10	1	IRON MAGNESIUM MANGANESE NICKEL OXIDE/CN
E11	1	IRON MAGNESIUM MANGANESE NICKEL OXIDE (FE1.73MG0.37MN0.81NI0.09O4)/CN
E12	1	IRON MAGNESIUM MANGANESE NICKEL ZINC OXIDE/CN

=> e iron lithium magnesium phosphate/cn

E1	1	IRON LITHIUM MAGNESIUM OXIDE (FE4.06LI0.68MG0.32O6.74)/CN
E2	1	IRON LITHIUM MAGNESIUM OXIDE (FE4.19LI0.73MG0.27O6.92)/CN
E3	0 -->	IRON LITHIUM MAGNESIUM PHOSPHATE/CN
E4	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0-0.1LI0.7-1MG(PO4))/CN
E5	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.03LI0.9MG(PO4))/CN
E6	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.04LI0.89MG(PO4))/CN
E7	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.07LI0.8MG(PO4))/CN
E8	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.1LI0.7MG(PO4))/CN
E9	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.2-1LI0.05-1.2MG0-0.8(P04))/CN
E10	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.25LIMG0.75(PO4))/CN
E11	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.7-1LIMG0-0.3(PO4))/CN
E12	1	IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.85LIMG0.15(PO4))/CN

=> s e1-e12

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1 "IRON LITHIUM MAGNESIUM OXIDE (FE4.06LI0.68MG0.3206.74)"/CN
1 "IRON LITHIUM MAGNESIUM OXIDE (FE4.19LI0.73MG0.2706.92)"/CN
0 "IRON LITHIUM MAGNESIUM PHOSPHATE"/CN
1 "IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.0.1LI0.7-1MG(P04))"/CN
1 "IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.03LI0.9MG(P04))"/CN
1 "IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.04LI0.89MG(P04))"/CN
1 "IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.07LI0.8MG(P04))"/CN
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1 "IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.2-1LI0.05-1.2MG0-0.8(P04)
)/CN
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1 "IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.7-1LIMG0-0.3(P04))"/CN
1 "IRON LITHIUM MAGNESIUM PHOSPHATE (FE0.85LIMG0.15(P04))"/CN
L3 11 ("IRON LITHIUM MAGNESIUM OXIDE (FE4.06LI0.68MG0.3206.74)"/CN OR
"IRON LITHIUM MAGNESIUM OXIDE (FE4.19LI0.73MG0.2706.92)"/CN OR
"IRON LITHIUM MAGNESIUM PHOSPHATE"/CN OR "IRON LITHIUM MAGNESIUM
PHOSPHATE (FE0.0.1LI0.7-1MG(P04))"/CN OR "IRON LITHIUM MAGNESIU
M PHOSPHATE (FE0.03LI0.9MG(P04))"/CN OR "IRON LITHIUM MAGNESIUM
PHOSPHATE (FE0.04LI0.89MG(P04))"/CN OR "IRON LITHIUM MAGNESIUM
PHOSPHATE (FE0.07LI0.8MG(P04))"/CN OR "IRON LITHIUM MAGNESIUM
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MAGNESIUM PHOSPHATE (FE0.25LIMG0.75(P04))"/CN OR "IRON LITHIUM
MAGNESIUM PHOSPHATE (FE0.7-1LIMG0-0.3(P04))"/CN OR "IRON LITHIUM
MAGNESIUM PHOSPHATE (FE0.85LIMG0.15(P04))"/CN)

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=> file caplus

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	ENTRY	SESSION
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DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
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FILE 'REGISTRY' ENTERED AT 16:27:35 ON 17 MAY 2002

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L1 1 S E3

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E BA0.2FE0.8LIO4P/MF

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L2 2 S L1

FILE 'STNGUIDE' ENTERED AT 16:40:54 ON 17 MAY 2002

FILE 'REGISTRY' ENTERED AT 16:43:24 ON 17 MAY 2002

E CA0.2FE0.8LIO4P/MF

E IRON MAGNESIUM LITHIUM PHOSPHATE/CN

E IRON LITHIUM MAGNESIUM PHOSPHATE/CN

L3 11 S E1-E12

FILE 'CAPLUS' ENTERED AT 16:48:35 ON 17 MAY 2002

=> s 13

L4 13 L3

=> d ibib ab it hitstr 1-

YOU HAVE REQUESTED DATA FROM 13 ANSWERS - CONTINUE? Y/(N):y

L4 ANSWER 1 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:292205 CAPLUS

TITLE: Nonaqueous electrolyte battery containing complex

lithium oxide positive electrode with olivine crystal structure  
 INVENTOR(S): Fukushima, Gen; Hosoya, Mamoru; Hisayama, Junji; Takahashi, Kimio; Sato, Atsushi; Okawa, Takeshi  
 PATENT ASSIGNEE(S): Sony Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	JP 2002117903	A2	20020419	JP 2000-306878	20001005
AB	A battery comprises a neg. electrode, a pos. electrode from a compd. $\text{Li}_x\text{Fe}_y\text{M}_y\text{PO}_4$ (M is Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B, Nb; $x = 0.05-1.2$ , $y = 0-0.8$ ), and a separator. The pos. electrode compd. has an olivine crystal structure. The combined vol. (a) of the electrodes and vol. (b) of separator satisfy the following conditions: $0.17 \leq \frac{a}{a+b} \leq 0.39$ . The battery has improved balance of energy d.				
IT	Secondary battery separators (controlled vol. of; nonaq. electrolyte battery contg. complex lithium oxide pos. electrode with olivine crystal structure)				
IT	Secondary batteries (lithium; nonaq. electrolyte battery contg. complex lithium oxide pos. electrode with olivine crystal structure)				
IT	Battery electrodes (nonaq. electrolyte battery contg. complex lithium oxide pos. electrode with olivine crystal structure)				
IT	Olivine-group minerals RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte battery contg. complex lithium oxide pos. electrode with olivine crystal structure)				
IT	Crystal structure (olivine; nonaq. electrolyte battery contg. complex lithium oxide pos. electrode with olivine crystal structure)				
IT	15365-14-7	407630-25-5	407630-29-9	407630-40-4	412267-76-6
	412267-77-7	412267-78-8	412267-79-9	412267-80-2	412267-81-3
	412267-82-4	412267-83-5	412267-84-6	412267-85-7	
	412267-86-8				
	RL: DEV (Device component use); USES (Uses) (pos. electrode contg.; nonaq. electrolyte battery contg. complex lithium oxide pos. electrode with olivine crystal structure)				
IT	412267-85-7 RL: DEV (Device component use); USES (Uses) (pos. electrode contg.; nonaq. electrolyte battery contg. complex lithium oxide pos. electrode with olivine crystal structure)				
RN	412267-85-7 CAPLUS				
L4	ANSWER 2 OF 13 CAPLUS COPYRIGHT 2002 ACS				

ACCESSION NUMBER: 2002:292166 CAPLUS  
 TITLE: Nonaqueous electrolyte secondary battery with lithium complex oxide positive electrode mix additionally containing lithium carbonate for improved charge-discharge cycle characteristic at high temperature  
 INVENTOR(S): Hosoya, Mamoru; Fukushima, Gen  
 PATENT ASSIGNEE(S): Sony Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	JP 2002117843	A2	20020419	JP 2000-306875	20001005
AB	A nonaq. electrolyte secondary battery comprises a $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ (M is Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B, and/or Nb; $x = 0.05-1.2$ , $y \leq 0.8$ ), pos. electrode active mix addnl. contg. $\text{Li}_2\text{CO}_3$ . The battery has improved charge-discharge cycle characteristic at high temp.				
IT	Battery cathodes (nonaq. electrolyte secondary battery with lithium complex oxide pos. electrode mix addnl. contg. lithium carbonate for improved charge-discharge cycle characteristic at high temp.)				
IT	Olivine-group minerals RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte secondary battery with lithium complex oxide pos. electrode mix addnl. contg. lithium carbonate for improved charge-discharge cycle characteristic at high temp.)				
IT	15365-14-7, Iron lithium phosphate ( $\text{FeLiPO}_4$ )	407630-25-5	407630-29-9		
	407630-40-4	412267-76-6	412267-77-7	412267-78-8	412267-79-9
	412267-80-2	412267-81-3	412267-82-4	412267-83-5	412267-84-6
	412267-85-7	412267-86-8			
	RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte secondary battery with lithium complex oxide pos. electrode mix addnl. contg. lithium carbonate for improved charge-discharge cycle characteristic at high temp.)				
IT	554-13-2, Lithium carbonate				
	RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (nonaq. electrolyte secondary battery with lithium complex oxide pos. electrode mix addnl. contg. lithium carbonate for improved charge-discharge cycle characteristic at high temp.)				
IT	412267-85-7				
	RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte secondary battery with lithium complex oxide pos. electrode mix addnl. contg. lithium carbonate for improved charge-discharge cycle characteristic at high temp.)				
RN	412267-85-7	CAPLUS			

L4 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272915 CAPLUS

DOCUMENT NUMBER: 136:297401

TITLE: Nonaqueous electrolyte battery with high discharge capacity

INVENTOR(S): Sakai, Hidecki; Fukushima, Yuzuru; Kuyama, Junji; Hosoya, Mamoru

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 17 pp.  
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195838	A2	20020410	EP 2001-123895	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117908	A2	20020419	JP 2000-308303	20001006
PRIORITY APPLN. INFO.: JP 2000-308303 A 20001006				
AB A nonaq. electrolyte cell is disclosed having high discharge capacity, an improved capacity upkeep ratio and optimum cyclic characteristics. The nonaq. electrolyte cell has a cell device including a strip-shaped cathode material and a strip-shaped anode material, layered and together via a separator and coiled a plural no. of times, a nonaq. electrolyte soln., and a cell can for accommodating cell device and the nonaq. electrolyte soln. The cathode employs a cathode active material contg. a compd. of the olivinic structure represented by the general formula $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ , where M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, with $0.05 \leq x \leq 1.2$ and $0 \leq y \leq 0.8$ , with the compd. being used either singly or in combination with other materials. The ratio of an inner diam. d to an outer diam. D of cell device is selected so that $0.05 < d/D < 0.5$ .				
IT Secondary batteries (lithium; nonaq. electrolyte battery with high discharge capacity)				
IT Battery cathodes (nonaq. electrolyte battery with high discharge capacity)				
IT Carbon black, uses RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte battery with high discharge capacity)				
IT lithium alloy, base RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte battery with high discharge capacity)				
IT 7439-93-2, Lithium, uses 15365-14-7, Iron lithium phosphate $\text{FePO}_4$ 407606-22-8, Chromium iron lithium phosphate ( $\text{Cr}_{0.8}\text{Fe}_{0.2}\text{Li}_{1.05}\text{PO}_4$ ) 1.2( $\text{PO}_4$ ) 407606-24-0, Cobalt iron lithium phosphate ( $\text{Co}_{0.8}\text{Fe}_{0.2}\text{Li}_{1.05}\text{PO}_4$ ) 407606-26-2, Copper iron lithium				

phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-28-4, Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-32-0 407606-34-2, Iron lithium manganese phosphate (Fe0.2-1Li0.05-1.2Mn0-0.8(P04)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(P04)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(P04)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(P04)) 407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(P04)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(P04)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(P04)) 407629-83-8 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-05-1 407630-10-8 407630-14-2 407630-25-5, Aluminum iron lithium phosphate (Al0.7Fe0.3Li(P04)) 407630-29-9, Gallium iron lithium phosphate (Ga0.7Fe0.3Li(P04)) 407630-35-7 407630-40-4, Boron iron lithium phosphate (B0.75Fe0.25Li(P04)) 408501-54-2

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte battery with high discharge capacity)

IT 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) 407630-35-7

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte battery with high discharge capacity)

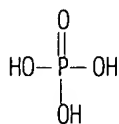
RN 407606-49-9 CAPLUS

CN Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) (9CI)  
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	1	14265-44-2
Mg	0 - 0.8	7439-95-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407630-35-7 CAPLUS

CN Phosphoric acid, iron(2+) lithium magnesium salt (4:1:4:3) (9CI) (CA INDEX NAME)



● 1/4 Fe(II)

● Li

● 3/4 Mg

L4 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272914 CAPLUS

DOCUMENT NUMBER: 136:297400

TITLE: Nonaqueous electrolyte secondary battery using olivinic lithium phosphorus oxide cathode active material

INVENTOR(S): Okawa, Tsuyoshi; Hosoya, Mamoru; Kuyama, Junji; Fukushima, Yuzuru

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 15 pp.  
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195837	A2	20020410	EP 2001-123893	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117907	A2	20020419	JP 2000-308302	20001006
PRIORITY APPLN. INFO.:			JP 2000-308302	A 20001006

AB In a battery, liq. leakage or destruction may be prevented as the apparent energy d. per unit vol. of the cell is maintained. The cell uses, as a cathode active material, a compd. of an olivinic crystal structure having the formula  $\text{Li}_x\text{Fe}_1-x\text{M}_y\text{PO}_4$ , where M is at least one selected from the group of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb and 0.05 .ltoreq. x .ltoreq. 1.2 and 0 .ltoreq. y .ltoreq. 0.8. By adjusting the amt. of the electrolyte soln., the amt. of the void in the container is set so as to be not less than 0.14 mL and not more than 3.3 mL per 1 Ah of the cell capacity.

IT Secondary batteries

(lithium; nonaq. electrolyte secondary battery using olivinic lithium



phosphorus oxide cathode active material)

IT Battery cathodes  
Composites  
(nonaq. electrolyte secondary battery using olivinic lithium phosphorus oxide cathode active material)

IT Coke  
RL: DEV (Device component use); USES (Uses)  
(pitch; nonaq. electrolyte secondary battery using olivinic lithium phosphorus oxide cathode active material)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7440-44-0, Carbon, uses 15365-14-7, Iron lithium phosphate felipo4 21324-40-3, Lithium hexafluorophosphate 407606-22-8, Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-24-0, Cobalt iron lithium phosphate (Co0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-26-2, Copper iron lithium phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-28-4, Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-32-0 407606-34-2, Iron lithium manganese phosphate (Fe0.2-1Li0.05-1.2Mn0-0.8(P04)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(P04)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(P04)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(P04)) 407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(P04)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(P04)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(P04)) 407629-83-8 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-05-1 407630-10-8 407630-14-2 407630-19-7 407630-25-5, Aluminum iron lithium phosphate (Al0.7Fe0.3Li(P04)) 407630-29-9, Gallium iron lithium phosphate (Ga0.7Fe0.3Li(P04)) 407630-35-7 407630-40-4, Boron iron lithium phosphate (B0.75Fe0.25Li(P04)) 407630-46-0  
RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery using olivinic lithium phosphorus oxide cathode active material)

IT 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) 407630-35-7  
RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery using olivinic lithium phosphorus oxide cathode active material)

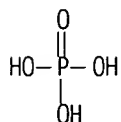
RN 407606-49-9 CAPLUS

CN Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) (9CI)  
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	1	14265-44-2
Mg	0 - 0.8	7439-95-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407630-35-7 CAPLUS

CN Phosphoric acid, iron(2+) lithium magnesium salt (4:1:4:3) (9CI) (CA  
INDEX NAME)



● 1/4 Fe(II)

● Li

● 3/4 Mg

L4 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272913 CAPLUS

DOCUMENT NUMBER: 136:297399

TITLE: Nonaqueous electrolyte secondary battery with a  
compound of an olivinic structure as a cathode active  
material

INVENTOR(S): Okawa, Tsuyoshi; Hosoya, Mamoru; Kuyama, Junji;  
Fukushima, Yuzuru

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 15 pp.  
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195836	A2	20020410	EP 2001-123892	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117833	A2	20020419	JP 2000-308301	20001006
PRIORITY APPLN. INFO.:			JP 2000-308301	A 20001006
AB A non-aq. electrolyte secondary cell contg. a compd. of an olivinic structure as a cathode active material is to be improved in load characteristics and cell capacity. To this end, there is provided a non-aq. electrolyte secondary cell including a cathode having a layer of a cathode active material contg. a compd. represented by the general formula				

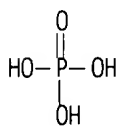
$\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ , where M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, with  $0.05 \leq x \leq 1.2$  and  $0 \leq y \leq 0.8$ , an anode having a layer of an anode active material and a non-aq. electrolyte, wherein the layer of the cathode active material has a film thickness in a range from 25 to 110  $\mu\text{m}$ . If a layer of a cathode active material is provided on each surface of a cathode current collector, the sum of the film thicknesses of the layers of the cathode active material ranges between 50 and 220  $\mu\text{m}$ . The non-aq. electrolyte may be a liq.-based electrolyte or a polymer electrolyte.

- IT Ball milling  
Battery cathodes  
Secondary batteries  
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)
- IT Carbon black, uses  
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)
- IT 10377-52-3, Lithium phosphate 13977-75-8, Phosphoric acid, iron(3+) salt (3:2)  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)
- IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 15365-14-7, Iron lithium phosphate felipo4 21324-40-3, Lithium hexafluorophosphate 407606-22-8, Chromium iron lithium phosphate ( $\text{Cr}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-24-0, Cobalt iron lithium phosphate ( $\text{Co}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-26-2, Copper iron lithium phosphate ( $\text{Cu}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-28-4, Aluminum iron lithium phosphate ( $\text{Al}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-30-8, Gallium iron lithium phosphate ( $\text{Ga}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-32-0 407606-36-4, Iron lithium nickel phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ni}_{0.8}\text{P}_4$ ) 407606-39-7, Iron lithium vanadium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{V}_{0.8}\text{P}_4$ ) 407606-42-2, Iron lithium molybdenum phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mo}_{0.8}\text{P}_4$ ) 407606-44-4, Iron lithium titanium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ti}_{0.8}\text{P}_4$ ) 407606-49-9, Iron lithium magnesium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mg}_{0.8}\text{P}_4$ ) 407629-81-6, Iron lithium zinc phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Zn}_{0.8}\text{P}_4$ ) 407629-82-7, Iron lithium niobium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Nb}_{0.8}\text{P}_4$ ) 407629-83-8 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-05-1 407630-10-8 407630-14-2 407630-19-7 407630-25-5, Aluminum iron lithium phosphate ( $\text{Al}_{0.7}\text{Fe}_{0.3}\text{LiP}_4$ ) 407630-29-9, Gallium iron lithium phosphate ( $\text{Ga}_{0.7}\text{Fe}_{0.3}\text{LiP}_4$ ) 407630-35-7 407630-40-4, Boron iron lithium phosphate ( $\text{B}_{0.75}\text{Fe}_{0.25}\text{LiP}_4$ ) 407630-46-0  
RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)

- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)
- IT 7439-93-2, Lithium, uses  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)
- IT 407606-49-9, Iron lithium magnesium phosphate (Fe<sub>0.2</sub>-Li<sub>0.05</sub>-1.2Mg<sub>0</sub>-0.8(P<sub>04</sub>)) 407630-35-7  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)
- RN 407606-49-9 CAPLUS
- CN Iron lithium magnesium phosphate (Fe<sub>0.2</sub>-Li<sub>0.05</sub>-1.2Mg<sub>0</sub>-0.8(P<sub>04</sub>)) (9CI)  
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0 - 0.8	7439-95-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

- RN 407630-35-7 CAPLUS
- CN Phosphoric acid, iron(2+) lithium magnesium salt (4:1:4:3) (9CI) (CA INDEX NAME)



● 1/4 Fe(II)

● Li

● 3/4 Mg

DOCUMENT NUMBER: 136:297398  
 TITLE: Cathode and anode materials for solid nonaqueous electrolyte battery  
 INVENTOR(S): Takahashi, Kimio; Hosoya, Mamoru; Miyake, Masami  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: Eur. Pat. Appl., 22 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195835	A2	20020410	EP 2001-123773	20011004
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117902	A2	20020419	JP 2000-306877	20001005
PRIORITY APPLN. INFO.:			JP 2000-306877	A 20001005
AB	A battery is not deteriorated in cell characteristics and maintains the cell shape encapsulated in a laminate film even when overdischarged to a cell voltage of 0 V. The cell includes a cathode contg. a compd. having the formula $\text{Li}_x\text{Fe}_{1-y}\text{MPO}_4$ , where M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, with $0.05 \leq x \leq 1.2$ and $0 \leq y \leq 0.8$ , an anode and a solid electrolyte. A cell member comprised of the cathode and the anode, layered together with the interposition of a solid electrolyte, is encapsulated in a laminate film.			
IT	Battery anodes Battery cathodes Battery electrolytes (cathode and anode materials for solid nonaq. electrolyte battery)			
IT	7440-44-0, Carbon, uses 15365-14-7, Iron lithium phosphate $\text{FeLiPO}_4$ 407606-22-8, Chromium iron lithium phosphate ( $\text{Cr}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-24-0, Cobalt iron lithium phosphate ( $\text{Co}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-26-2, Copper iron lithium phosphate ( $\text{Cu}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-28-4, Aluminum iron lithium phosphate ( $\text{Al}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-30-8, Gallium iron lithium phosphate ( $\text{Ga}_{0.8}\text{Fe}_{0.2}\text{Li}_{0.05}\text{P}_4$ ) 407606-32-0, Iron lithium manganese phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mn}_{0.8}\text{P}_4$ ) 407606-34-2, Iron lithium nickel phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ni}_{0.8}\text{P}_4$ ) 407606-36-4, Iron lithium vanadium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{V}_{0.8}\text{P}_4$ ) 407606-39-7, Iron lithium molybdenum phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mo}_{0.8}\text{P}_4$ ) 407606-42-2, Iron lithium titanium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Ti}_{0.8}\text{P}_4$ ) 407606-44-4, Iron lithium zinc phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Zn}_{0.8}\text{P}_4$ ) 407606-47-7, Iron lithium magnesium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mg}_{0.8}\text{P}_4$ ) 407606-49-9, Iron lithium niobium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Nb}_{0.8}\text{P}_4$ ) 407606-51-3, Iron lithium niobium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Nb}_{0.8}\text{P}_4$ ) RL: DEV (Device component use); USES (Uses) (cathode and anode materials for solid nonaq. electrolyte battery)			

IT 7439-93-2, Lithium, uses  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (cathode and anode materials for solid nonaq. electrolyte battery)  
 IT 407606-49-9, Iron lithium magnesium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mg}_{1.2}\text{PO}_4$ )  
 RL: DEV (Device component use); USES (Uses)  
 (cathode and anode materials for solid nonaq. electrolyte battery)  
 RN 407606-49-9 CAPLUS  
 CN Iron lithium magnesium phosphate ( $\text{Fe}_{0.2}\text{Li}_{0.05}\text{Mg}_{1.2}\text{PO}_4$ ) (9CI)  
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	1	14265-44-2
Mg	0 - 0.8	7439-95-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

L4 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2002 ACS  
 ACCESSION NUMBER: 2002:272909 CAPLUS  
 DOCUMENT NUMBER: 136:297395  
 TITLE: Method for fabrication of cathode active material and a nonaqueous electrolyte battery  
 INVENTOR(S): Hosoya, Mamoru; Fukushima, Yuzuru; Sakai, Hidecki; Kuyama, Junji  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: Eur. Pat. Appl., 31 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1195827	A2	20020410	EP 2001-123894	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117848	A2	20020419	JP 2000-308300	20001006
JP 2002117849	A2	20020419	JP 2000-308313	20001006
PRIORITY APPLN. INFO.:			JP 2000-308300	A 20001006
			JP 2000-308313	A 20001006

AB The invention comprises a method for producing a cathode active material having superior cell characteristics through single-phase synthesis of a composite material composed of a compd. represented by the general formula  $\text{Li}_x\text{Fe}_{1-y}\text{Mg}_y\text{PO}_4$  and a carbon material pos. and a method for producing a non-aq. electrolyte cell employing the so produced cathode active material. To this end, the cathode active material is prepd. by a step of

- mixing the starting materials for synthesis of the compd. represented by the general formula  $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ , a step of milling a mixt. obtained by the mixing step, a step of compressing the mixt. obtained by the mixing step to a preset d. and a step of sintering the mixt. obtained by the compressing step. A carbon material is added in any one of the above steps prior to the sintering step. The d. of the mixt. in the compressing step is set to not less than 1.71 g/cm<sup>3</sup> and not larger than 2.45 g/cm<sup>3</sup>.
- IT Ball milling  
Battery cathodes  
Composites  
Secondary batteries  
(method for fabrication of cathode active material and nonaq. electrolyte battery)
- IT Carbon black, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(method for fabrication of cathode active material and nonaq. electrolyte battery)
- IT 7440-44-0, Carbon, uses 198782-39-7, Iron lithium phosphate ( $\text{FeLiO}-1(\text{PO}_4)$ ) 407606-22-8, Chromium iron lithium phosphate ( $\text{CrO}-0.8\text{FeO}.2-1\text{LiO}.05-1.2(\text{PO}_4)$ ) 407606-24-0, Cobalt iron lithium phosphate ( $\text{CoO}-0.8\text{FeO}.2-1\text{LiO}.05-1.2(\text{PO}_4)$ ) 407606-26-2, Copper iron lithium phosphate ( $\text{CuO}-0.8\text{FeO}.2-1\text{LiO}.05-1.2(\text{PO}_4)$ ) 407606-28-4, Aluminum iron lithium phosphate ( $\text{AlO}-0.8\text{FeO}.2-1\text{LiO}.05-1.2(\text{PO}_4)$ ) 407606-30-8, Gallium iron lithium phosphate ( $\text{GaO}-0.8\text{FeO}.2-1\text{LiO}.05-1.2(\text{PO}_4)$ ) 407606-32-0 407606-34-2, Iron lithium manganese phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{MnO}-0.8(\text{PO}_4)$ ) 407606-36-4, Iron lithium nickel phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{NiO}-0.8(\text{PO}_4)$ ) 407606-39-7, Iron lithium vanadium phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{VO}-0.8(\text{PO}_4)$ ) 407606-42-2, Iron lithium molybdenum phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{MoO}-0.8(\text{PO}_4)$ ) 407606-44-4, Iron lithium titanium phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{TiO}-0.8(\text{PO}_4)$ ) 407606-47-7, Iron lithium zinc phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{ZnO}-0.8(\text{PO}_4)$ ) 407606-49-9, Iron lithium magnesium phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{MgO}-0.8(\text{PO}_4)$ ) 407606-51-3, Iron lithium niobium phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{NbO}-0.8(\text{PO}_4)$ ) 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-10-8 407630-14-2  
RL: DEV (Device component use); USES (Uses)  
(method for fabrication of cathode active material and nonaq. electrolyte battery)
- IT 15365-14-7P, Iron lithium phosphate  $\text{FeLiPO}_4$   
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(method for fabrication of cathode active material and nonaq. electrolyte battery)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer  
RL: MOA (Modifier or additive use); USES (Uses)  
(method for fabrication of cathode active material and nonaq. electrolyte battery)
- IT 407606-49-9, Iron lithium magnesium phosphate ( $\text{FeO}.2-1\text{LiO}.05-1.2\text{MgO}-0.8(\text{PO}_4)$ )  
RL: DEV (Device component use); USES (Uses)

(method for fabrication of cathode active material and nonaq.  
electrolyte battery)

RN 407606-49-9 CAPLUS

CN Iron lithium magnesium phosphate ( $\text{Fe}_{0.2}\text{-Li}_{0.05}\text{-1.2Mg}_{0.8}(\text{PO}_4)$ ) (9CI)  
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0 - 0.8	7439-95-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

L4 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:272908 CAPLUS

DOCUMENT NUMBER: 136:297394

TITLE: Solid electrolyte cell

INVENTOR(S): Goto, Shuji; Hosoya, Mamoru; Endo, Takahiro

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195826	A2	20020410	EP 2001-123774	20011004
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117844	A2	20020419	JP 2000-306876	20001005
PRIORITY APPLN. INFO.:			JP 2000-306876	A 20001005
AB	A solid electrolyte cell in which cell characteristics are not deteriorated even on overdischarge to the cell voltage of 0 V, such that the shape of the cell encapsulated in the laminate film is maintained. The cell includes a cathode contg. a compd. represented by the general formula $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ where $0.05 \leq x \leq 1.2$ , $0 \leq y \leq 0.8$ , and M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, an anode and a solid electrolyte. An electrode unit 1 comprised of the cathode and the anode layered together with interposition of the solid electrolyte is encapsulated with a laminate film 2.			
IT	Polyoxyalkylenes, uses			
	RL: DEV (Device component use); USES (Uses) (lithium complex; solid electrolyte cell)			
IT	Battery cathodes			
	Secondary batteries (solid electrolyte cell)			



- IT Fluoropolymers, uses  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (solid electrolyte cell)
- IT 7439-93-2D, Lithium, polyethylene oxide complex 7791-03-9, Lithium perchlorate 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 15365-14-7, Iron lithium phosphate felipo4 25322-68-3D, Polyethylene oxide, lithium complex 116327-69-6, Cobalt lithium nickel oxide Co0.1LiNi0.9O2 147812-18-8, Iron lithium manganese oxide Fe0.05LiMn1.95O4 407606-22-8, Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-24-0, Cobalt iron lithium phosphate (Co0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-26-2, Copper iron lithium phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-28-4, Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(P04)) 407606-32-0 407606-34-2, Iron lithium manganese phosphate (Fe0.2-1Li0.05-1.2Mn0-0.8(P04)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(P04)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(P04)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(P04)) 407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(P04)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(P04)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(P04)) 408331-94-2 408331-95-3 408331-96-4 408331-97-5 408331-99-7 408332-00-3 408332-01-4 408332-02-5 408332-03-6 408332-04-7 408332-05-8 408332-06-9 408332-07-0 408332-08-1 408332-09-2 408332-10-5 408332-11-6 408332-12-7 408332-13-8 408332-14-9 408332-15-0 408332-16-1 408332-17-2 408332-18-3 408332-19-4 408332-20-7 408332-21-8 408332-22-9 408332-23-0 408332-24-1 408332-25-2 408332-26-3 408332-27-4 408332-28-5 408332-29-6 408332-30-9 408332-31-0 408332-32-1 408332-33-2 408332-34-3 408332-35-4 408332-36-5 408332-37-6 408332-38-7 408332-39-8 408332-40-1 408332-42-3 408332-44-5 408332-45-6 408332-46-7 408332-47-8 408332-48-9 408332-50-3 408332-58-1, Aluminum cobalt lithium nickel oxide (Al0.01Co0.98LiNi0.01O2)  
 RL: DEV (Device component use); USES (Uses)  
 (solid electrolyte cell)
- IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 24937-79-9, PvdF  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (solid electrolyte cell)
- IT 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04))  
 RL: DEV (Device component use); USES (Uses)  
 (solid electrolyte cell)
- RN 407606-49-9 CAPLUS
- CN Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(P04)) (9CI)

## (CA INDEX NAME)

Component	Ratio	Component Registry Number
Q4P	1	14265-44-2
Mg	0 - 0.8	7439-95-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

L4 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:256645 CAPLUS

DOCUMENT NUMBER: 136:297382

TITLE: Carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes

INVENTOR(S): Armand, Michel; Gauthier, Michel; Magnan, Jean-Francois; Ravet, Nathalie

PATENT ASSIGNEE(S): Hydro-Quebec, Can.

SOURCE: PCT Int. Appl., 78 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002027824	A1	20020404	WO 2001-CA1350	20010921

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: CA 2000-2320661 A 20000926

AB Carbon-coated redox materials suitable for use in battery electrodes consist of a core surrounded by a coating, or interconnected by carbon crosslinks, in which the core includes a compn. of formula  $\text{Li}_x\text{M}_1\text{-yM}'\text{y}(\text{XO}_4)_n$ , in which  $y = 0\text{-}0.6$ ,  $x = 0\text{-}2$ ,  $n = 0\text{-}1.5$ ; M is a transition metal; and M' is a element of fixed valence selected from  $\text{Mg}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Al}^{3+}$ , and  $\text{Zn}^{2+}$ , and X is S, P, and Si. Synthesis of the materials is carried out by reacting a balanced mixt. of appropriate precursors in a reducing atm., to adjust the valence of the transition metals, in the presence of a carbon source, which is then pyrolyzed. The resulting products exhibit an excellent elec. cond. and a highly enhanced chem. activity.

- IT Silanes  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(alkoxy, silicon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT Polyoxyalkylenes, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(alkyl ethers, oligomeric, aprotic solvent; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT Fluoropolymers, uses  
Polyesters, uses  
Polyethers, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(binders; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT Battery cathodes  
Battery electrodes  
Redox agents  
(carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT Transition metals, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(electrodes contg.: carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT 78-93-3, Methyl ethyl ketone, uses 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 107-21-1D, Ethylene glycol, alkyl ethers 108-32-7, Propylene carbonate 111-46-6D, Diethylene glycol, alkyl ethers 112-27-6D, Triethylene glycol, alkyl ethers 112-60-7D, Tetraethylene glycol, alkyl ethers 463-79-6D, Carbonic acid, C1-4-alkyl esters  
RL: NUU (Other use, unclassified); USES (Uses)  
(aprotic solvent; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT 9011-14-7, Poly(methyl methacrylate) 24937-79-9, Poly(vinylidene difluoride) 25014-41-9, Polyacrylonitrile  
RL: NUU (Other use, unclassified); USES (Uses)  
(binders; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT 50-99-7, Glucose, reactions 57-48-7, Fructose, reactions 57-50-1, Sucrose, reactions 58-86-6, Xylose, reactions 87-79-6, Sorbose 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9004-34-6, Cellulose, reactions 9004-34-6D, Cellulose, esters 9004-35-7, Cellulose acetate 9005-25-8, Starch, reactions 25212-86-6, Poly(furfuryl alcohol) 43094-71-9, Ethylene-ethylene oxide copolymer  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(carbon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)
- IT 407640-63-5  
RL: DEV (Device component use); USES (Uses)  
(electrodes contg.: carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

- IT 7439-89-6D, Iron, mixed oxides 7439-96-5D, Manganese, mixed oxides  
7440-02-0D, Nickel, mixed oxides 7440-32-6D, Titanium, mixed oxides  
7440-47-3D, Chromium, mixed oxides 7440-48-4D, Cobalt, mixed oxides  
7440-50-8D, Copper, mixed oxides 7440-62-2D, Vanadium, mixed oxides  
13816-45-0, Triphylite 15365-14-7, Iron lithium phosphate ( $\text{FeLiPO}_4$ )  
213467-46-0, Iron lithium manganese phosphate ( $\text{FeLi}_2\text{Mn}(\text{PO}_4)_2$ )  
RL: TEM (Technical or engineered material use); USES (Uses)  
(electrodes contg.: carbon-coated or carbon-crosslinked redox materials  
with transition metal-lithium oxide core for use as battery electrodes)
- IT 90076-65-6  
RL: NUU (Other use, unclassified); USES (Uses)  
(electrolyte contg.: carbon-coated or carbon-crosslinked redox  
materials with transition metal-lithium oxide core for use as battery  
electrodes)
- IT 516-03-0, Ferrous oxalate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(iron source; carbon-coated or carbon-crosslinked redox materials with  
transition metal-lithium oxide core for use as battery electrodes)
- IT 7429-90-5, Aluminum, uses 7440-31-5, Tin, uses 7440-36-0, Antimony,  
uses 7440-66-6, Zinc, uses 7782-42-5, Graphite, uses 39302-37-9,  
Lithium titanate 207803-50-7, Aluminum cobalt lithium magnesium nickel  
oxide 258511-24-9, Iron lithium nitride 263898-18-6, Cobalt manganese  
nitride 407640-62-4  
RL: DEV (Device component use); USES (Uses)  
(lithium-based cathodes contg.: carbon-coated or carbon-crosslinked  
redox materials with transition metal-lithium oxide core for use as  
battery electrodes)
- IT 638-38-0, Manganese(II) acetate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(manganese source; carbon-coated or carbon-crosslinked redox materials  
with transition metal-lithium oxide core for use as battery electrodes)
- IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium  
carbonate 1309-37-1, Ferric oxide, reactions 1310-65-2, Lithium  
hydroxide 1313-13-9, Manganese dioxide, reactions 1314-62-1, Vanadium  
pentoxide, reactions 1317-61-9, Magnetite, reactions 10045-86-0,  
Ferric phosphate 10102-24-6, Lithium silicate ( $\text{Li}_2\text{SiO}_3$ ) 10377-48-7,  
Lithium sulfate 10377-52-3, Lithium phosphate ( $\text{Li}_3\text{PO}_4$ ) 10421-48-4,  
Ferric nitrate 12057-24-8, Lithium oxide, reactions 12627-14-4  
13453-80-0, Lithium dihydrogen phosphate 63985-45-5, Lithium  
orthosilicate 407640-52-2, Iron lithium manganese phosphate  
( $\text{Fe}_{0.1}\text{-LiMn}_{0.9}\text{(PO}_4\text{)}$ ) 407640-53-3, Iron lithium magnesium  
phosphate ( $\text{Fe}_{0.7}\text{-LiMg}_{0.3}\text{(PO}_4\text{)}$ ) 407640-54-4, Calcium iron lithium  
phosphate ( $\text{Ca}_{0.0}\text{-0.3Fe}_{0.7}\text{-Li(PO}_4\text{)}$ ) 407640-55-5 407640-56-6  
407640-57-7 407640-58-8 407640-59-9 407640-60-2 407640-61-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(metal source; carbon-coated or carbon-crosslinked redox materials with  
transition metal-lithium oxide core for use as battery electrodes)
- IT 25322-68-3D, Polyethylene glycol, alkyl ethers  
RL: NUU (Other use, unclassified); USES (Uses)  
(oligomeric, aprotic solvent; carbon-coated or carbon-crosslinked redox  
materials with transition metal-lithium oxide core for use as battery

electrodes)

IT 7664-38-2, Phosphoric acid, reactions 7664-38-2D, Phosphoric acid, esters 7783-28-0, Ammonium hydrogen phosphate 10124-54-6, Manganese phosphate  
 RL: RCT (Reactant): RACT (Reactant or reagent)  
 (phosphorus source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 7631-86-9, Silica, reactions  
 RL: RCT (Reactant): RACT (Reactant or reagent)  
 (silicon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 7664-93-9, Sulfuric acid, reactions 7783-20-2, Ammonium sulfate, reactions  
 RL: RCT (Reactant): RACT (Reactant or reagent)  
 (sulfur source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 407640-53-3, Iron lithium magnesium phosphate (Fe<sub>0.7</sub>-1LiMg<sub>0</sub>-0.3(P<sub>04</sub>))  
 RL: RCT (Reactant): RACT (Reactant or reagent)  
 (metal source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

RN 407640-53-3 CAPLUS

CN Iron lithium magnesium phosphate (Fe<sub>0.7</sub>-1LiMg<sub>0</sub>-0.3(P<sub>04</sub>)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	1	14265-44-2
Mg	0 - 0.3	7439-95-4
Li	1	7439-93-2
Fe	0.7 - 1	7439-89-6

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:9172 CAPLUS

DOCUMENT NUMBER: 136:225905

TITLE: Clustering of Fe<sup>3+</sup> in the Li<sub>1-3x</sub>Fe<sub>x</sub>MgP<sub>04</sub> (0<x<0.1) solid solution

AUTHOR(S): Goni, Aintzane; Lezama, Luis; Pujana, Ainhoa; Arriortua, Maria Isabel; Rojo, Teofilo

CORPORATE SOURCE: Universidad del Pais Vasco, Departamento Quimica Inorganica, Bilbao, 48080, Spain

SOURCE: International Journal of Inorganic Materials (2001), 3(7), 937-942  
 CODEN: IJIMCR; ISSN: 1466-6049

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The  $\text{Li}_{1-3x}\text{Fe}_x\text{MgPO}_4$  ( $0 < x < 0.1$ ) solid soln. was prepd. by solid state synthesis. The structure of these phases was detd. by x-ray diffraction on polycryst. samples, being isostructural with  $\text{LiMgPO}_4$ .  $\text{Fe}^{3+}$  substitutes part of the  $\text{Li}^+$  ions in the channels of the  $\text{LiMgPO}_4$  structure along the [010] direction, creating cation vacancies. The IR bands corresponding to the vibrational modes of the phosphate groups undergo a gradual widening with the amt. of inserted iron as a consequence of the increase of disorder in the structure. The EPR spectra show signals with an effective  $g' = 4.0$ . This fact can be attributed to the presence of high spin  $\text{Fe}^{3+}$  ions in orthorhombic symmetry. The increase of  $\text{Fe}^{3+}$  in the compds. leads to a broadening of the Lorentzian EPR signals indicating the existence of magnetic interactions between the  $\text{Fe}^{3+}$  ions. Magnetic susceptibility measurements on the  $\text{Li}_{1-3x}\text{Fe}_x\text{MgPO}_4$  ( $0 < x < 0.1$ ) solid soln. show antiferromagnetic behaviors which can be explained considering that the doped  $\text{Fe}^{3+}$  ions exhibit a short range magnetic order, forming clusters assocd. with the vacancies in the structure.

IT Antiferromagnetic ordering

Crystal structure

ESR (electron spin resonance)

Magnetic susceptibility

Molecular structure

(of lithium iron magnesium phosphate ( $\text{Li}_{1-3x}\text{Fe}_x\text{MgPO}_4$  ( $0 < x < 0.1$ )) solid soln. contg.  $\text{Fe}^{3+}$  clusters assocd. with vacancies)

IT 210709-38-9P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.03}\text{Li}_{0.9}\text{MgPO}_4$ )

210709-40-3P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.1}\text{Li}_{0.7}\text{MgPO}_4$ )

402519-34-0P, Iron lithium magnesium phosphate

( $\text{Fe}_{0.01}\text{Li}_{0.7-1}\text{Mg}(\text{PO}_4)$ ) 402519-35-1P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.07}\text{Li}_{0.8}\text{Mg}(\text{PO}_4)$ )

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (prepn., crystal structure, ESR and magnetic properties)

IT 1310-65-2, Lithium hydroxide ( $\text{LiOH}$ ) 7722-76-1, Monoammonium phosphate

10377-60-3 10421-48-4, Iron nitrate ( $\text{Fe}(\text{NO}_3)_3$ )

RL: RCT (Reactant); RACT (Reactant or reagent)

(reactant for prepn. of lithium iron magnesium phosphate

( $\text{Li}_{1-3x}\text{Fe}_x\text{MgPO}_4$  ( $0 < x < 0.1$ )) solid soln. contg.  $\text{Fe}^{3+}$  clusters assocd. with vacancies)

IT 210709-38-9P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.03}\text{Li}_{0.9}\text{MgPO}_4$ )

210709-40-3P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.1}\text{Li}_{0.7}\text{MgPO}_4$ )

402519-34-0P, Iron lithium magnesium phosphate

( $\text{Fe}_{0.01}\text{Li}_{0.7-1}\text{Mg}(\text{PO}_4)$ ) 402519-35-1P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.07}\text{Li}_{0.8}\text{Mg}(\text{PO}_4)$ )

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (prepn., crystal structure, ESR and magnetic properties)

RN 210709-38-9 CAPLUS

CN Iron lithium magnesium phosphate ( $\text{Fe}_{0.03}\text{Li}_{0.9}\text{Mg}(\text{PO}_4)$ ) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	1	14265-44-2

Mg		1		7439-95-4
Li		0.9		7439-93-2
Fe		0.03		7439-89-6

RN 210709-40-3 CAPLUS

CN Iron lithium magnesium phosphate (Fe<sub>0.1</sub>Li<sub>0.7</sub>Mg(P<sub>04</sub>)) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O4P		1		14265-44-2
Mg		1		7439-95-4
Li		0.7		7439-93-2
Fe		0.1		7439-89-6

RN 402519-34-0 CAPLUS

CN Iron lithium magnesium phosphate (Fe<sub>0-0.1</sub>Li<sub>0.7-1</sub>Mg(P<sub>04</sub>)) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O4P		1		14265-44-2
Mg		1		7439-95-4
Li		0.7 - 1		7439-93-2
Fe		0 - 0.1		7439-89-6

RN 402519-35-1 CAPLUS

CN Iron lithium magnesium phosphate (Fe<sub>0.07</sub>Li<sub>0.8</sub>Mg(P<sub>04</sub>)) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O4P		1		14265-44-2
Mg		1		7439-95-4
Li		0.8		7439-93-2
Fe		0.07		7439-89-6

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:225610 CAPLUS

DOCUMENT NUMBER: 134:254632

TITLE: Secondary lithium batteries using lithium iron phosphate cathodes

INVENTOR(S): Takahashi, Masaya; Tobishima, Shinichi; Takei, Koji; Sakurai, Yoji

PATENT ASSIGNEE(S): Nippon Telegraph and Telephone Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	JP 2001085010	A2	20010330	JP 1999-261394	19990916
AB	The batteries use $\text{Li}_z\text{Fe}_{1-y}\text{X}_y\text{PO}_4$ ( $0 < z \leq 1$ ; $X = \text{element}$ electrochem. stable in 3-4 V potential vs. Li std. potential) having olivine-type structure as the cathode active materials. Preferably, the $X$ is Mg, Co, Ni, and/or Zn. The batteries, capable of charging and discharging at $\leq 4$ V, inhibit decompn. of electrolyte, and show improved discharge capacity and cycling performance.				
IT	Secondary batteries (secondary Li batteries using lithium iron phosphate cathodes)				
IT	Battery cathodes (secondary; secondary Li batteries using lithium iron phosphate cathodes)				
IT	331622-62-9P, Iron lithium nickel phosphate ( $\text{Fe}_{0.8}\text{LiNi}_{0.2}(\text{PO}_4)$ ) 331622-63-0P, Cobalt iron lithium phosphate ( $\text{Co}_{0.2}\text{Fe}_{0.8}\text{Li}(\text{PO}_4)$ ) 331622-64-1P, Cobalt iron lithium phosphate ( $\text{Co}_{0.1}\text{Fe}_{0.9}\text{Li}(\text{PO}_4)$ ) 331622-65-2P, Iron lithium zinc phosphate ( $\text{Fe}_{0.8}\text{LiZn}_{0.2}(\text{PO}_4)$ ) 331622-66-3P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.85}\text{LiMg}_{0.15}(\text{PO}_4)$ ) RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses) (cathodes; secondary Li batteries using lithium iron phosphate cathodes)				
IT	331622-66-3P, Iron lithium magnesium phosphate ( $\text{Fe}_{0.85}\text{LiMg}_{0.15}(\text{PO}_4)$ ) RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses) (cathodes; secondary Li batteries using lithium iron phosphate cathodes)				
RN	331622-66-3 CAPLUS				
CN	Iron lithium magnesium phosphate ( $\text{Fe}_{0.85}\text{LiMg}_{0.15}(\text{PO}_4)$ ) (9CI) (CA INDEX NAME)				

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.15	7439-95-4
Li	1	7439-93-2
Fe	0.85	7439-89-6



ACCESSION NUMBER: 1998:386203 CAPLUS  
 DOCUMENT NUMBER: 129:144051  
 TITLE: 7Li and 31P nuclear magnetic resonance studies of  
 Li1-3xMgFexPO4  
 AUTHOR(S): Goni, A.; Bonagamba, T. J.; Silva, M. A.; Panepucci,  
 H.; Rojo, T.; Barberis, G. E.  
 CORPORATE SOURCE: Facultad de Ciencias, Departamento de Quimica  
 Inorganica, Universidad del Pais Vasco, Bilbao, Spain  
 SOURCE: Journal of Applied Physics (1998), 84(1), 416-421  
 CODEN: JAPIAU; ISSN: 0021-8979  
 PUBLISHER: American Institute of Physics  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The authors report a 7Li and 31P NMR study in the Li1-3xMgFexPO4 phases  
 between 150 and 410 K This study, complementary to those made using  
 Moessbauer and magnetic neutron diffraction expts., confirms that the Fe  
 ions enter as Fe(III) in the lattice, and that they enter substituting Li  
 ions. Ionic cond. measurements, together with the NMR behavior of the 7Li  
 and 31P NMR spectra show that no Li mobility occurs in the temp. range  
 studied even with the addn. of the Fe impurity.

IT Ionic conductivity  
 Mossbauer effect  
 NMR (nuclear magnetic resonance)

(7Li and 31P NMR studies of Li1-3xMgFexPO4)

IT 7723-14-0, Phosphorus-31, properties 13775-51-4, Lithium magnesium  
 phosphate (LiMgPO4) 13982-05-3, Lithium-7, properties  
 210709-38-9, Iron lithium magnesium phosphate (Fe0.03Li0.9Mg(PO4))  
 210709-39-0, Iron lithium magnesium phosphate  
 (Fe0.04Li0.89Mg(PO4)) 210709-40-3, Iron lithium magnesium  
 phosphate (Fe0.1Li0.7Mg(PO4))

RL: PRP (Properties)

(7Li and 31P NMR studies of Li1-3xMgFexPO4)

IT 210709-38-9, Iron lithium magnesium phosphate (Fe0.03Li0.9Mg(PO4))  
 210709-39-0, Iron lithium magnesium phosphate  
 (Fe0.04Li0.89Mg(PO4)) 210709-40-3, Iron lithium magnesium  
 phosphate (Fe0.1Li0.7Mg(PO4))

RL: PRP (Properties)

(7Li and 31P NMR studies of Li1-3xMgFexPO4)

RN 210709-38-9 CAPLUS

CN Iron lithium magnesium phosphate (Fe0.03Li0.9Mg(PO4)) (9CI) (CA INDEX  
 NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O4P	1	14265-44-2
Mg	1	7439-95-4
Li	0.9	7439-93-2
Fe	0.03	7439-89-6

RN 210709-39-0 CAPLUS

CN Iron lithium magnesium phosphate ( $\text{Fe}_{0.04}\text{Li}_{0.89}\text{Mg}(\text{PO}_4)$ ) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	1	7439-95-4
Li	0.89	7439-93-2
Fe	0.04	7439-89-6

RN 210709-40-3 CAPLUS

CN Iron lithium magnesium phosphate ( $\text{Fe}_{0.1}\text{Li}_{0.7}\text{Mg}(\text{PO}_4)$ ) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	1	7439-95-4
Li	0.7	7439-93-2
Fe	0.1	7439-89-6

L4 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:109474 CAPLUS

DOCUMENT NUMBER: 128:198744

TITLE: Crystallization of mixed ferrites from lithium-containing oxide melts

AUTHOR(S): Viting, L. M.; Burtseva, O. G.; Kuznetsova, O. A.; Motyl'kova, S. V.

CORPORATE SOURCE: Mosk. Gos. Univ., Moscow, Russia

SOURCE: Vestn. Mosk. Univ., Ser. 2: Khim. (1997), 38(5), 338-341

CODEN: VMUKA5; ISSN: 0579-9384

PUBLISHER: Izdatel'stvo Moskovskogo Universiteta

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB The investigation of the crystn. of phases obtained during cooling of melt-solns. in Li-contg. solvent-Mg, Mn and Mg-Mn ferrite systems establishes the formation of mixed Li-M ferrites. The equil. coeffs. of substitution according to R. C. Linares (1965) were detd. The value of  $K_{\text{sub}}$  for given pair Li-M is const. for any compn. of initial charge which permits one to obtain mixed ferrites of prescribed compn. Soly. of ferrites in melt and value of  $K_{\text{sub}}$  is related to the diversity of acid-base properties of components in the solvent-ferrite system.

IT Phase diagram  
(of ferrites-lithium borate vanadate melt)

IT Crystallization  
(of mixed ferrites from lithium-contg. oxide melts)

IT 12063-10-4, Iron manganese oxide  $\text{Fe}_2\text{MnO}_4$  12068-86-9, Iron magnesium

oxide  $\text{Fe}_2\text{MgO}_4$  13453-69-5, Lithium borate  $\text{LiBO}_2$  15593-56-3, Lithium vanadate  $\text{Li}_3\text{VO}_4$  98112-11-9, Iron magnesium manganese oxide  $\text{Fe}_6\text{MgMn}_3\text{O}_{13}$  203795-59-9, Iron lithium magnesium oxide ( $\text{Fe}_4.19\text{Li}_0.73\text{Mg}_0.27\text{O}_6.92$ ) 203795-62-4, Iron lithium magnesium oxide ( $\text{Fe}_4.06\text{Li}_0.68\text{Mg}_0.32\text{O}_6.74$ ) 203795-65-7, Iron lithium magnesium oxide ( $\text{Fe}_3.9\text{Li}_0.64\text{Mg}_0.36\text{O}_6.54$ ) 203795-68-0, Iron lithium magnesium oxide ( $\text{Fe}_3.78\text{Li}_0.6\text{Mg}_0.4\text{O}_6.38$ ) 203795-71-5, Iron lithium magnesium oxide ( $\text{Fe}_3.68\text{Li}_0.56\text{Mg}_0.44\text{O}_6.24$ ) 203795-74-8, Iron lithium manganese oxide ( $\text{Fe}_2.76\text{Li}_0.26\text{Mn}_0.74\text{O}_5.02$ ) 203795-77-1, Iron lithium manganese oxide ( $\text{Fe}_2.69\text{Li}_0.23\text{Mn}_0.77\text{O}_4.92$ ) 203795-80-6, Iron lithium manganese oxide ( $\text{Fe}_2.6\text{Li}_0.2\text{Mn}_0.8\text{O}_4.8$ ) 203795-83-9, Iron lithium manganese oxide ( $\text{Fe}_2.52\text{Li}_0.18\text{Mn}_0.82\text{O}_4.7$ ) 203795-86-2, Iron lithium magnesium manganese oxide ( $\text{Fe}_5.5\text{Li}_0.5\text{Mg}_0.5\text{Mn}_1.48\text{O}_{10.48}$ ) 203795-89-5, Iron lithium magnesium manganese oxide ( $\text{Fe}_5.54\text{Li}_0.46\text{Mg}_0.54\text{Mn}_1.62\text{O}_{10.7}$ ) 203795-92-0, Iron lithium magnesium manganese oxide ( $\text{Fe}_5.67\text{Li}_0.33\text{Mg}_0.67\text{Mn}_2.01\text{O}_{11.35}$ )  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (crystn. of mixed ferrites from lithium-contg. oxide melts)

IT 203795-59-9, Iron lithium magnesium oxide ( $\text{Fe}_4.19\text{Li}_0.73\text{Mg}_0.27\text{O}_6.92$ ) 203795-62-4, Iron lithium magnesium oxide ( $\text{Fe}_4.06\text{Li}_0.68\text{Mg}_0.32\text{O}_6.74$ )  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (crystn. of mixed ferrites from lithium-contg. oxide melts)

RN 203795-59-9 CAPLUS

CN Iron lithium magnesium oxide ( $\text{Fe}_4.19\text{Li}_0.73\text{Mg}_0.27\text{O}_6.92$ ) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.92	17778-80-2
Mg	0.27	7439-95-4
Li	0.73	7439-93-2
Fe	4.19	7439-89-6

RN 203795-62-4 CAPLUS

CN Iron lithium magnesium oxide ( $\text{Fe}_4.06\text{Li}_0.68\text{Mg}_0.32\text{O}_6.74$ ) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.74	17778-80-2
Mg	0.32	7439-95-4
Li	0.68	7439-93-2
Fe	4.06	7439-89-6